UPONOR

UNDERFLOOR HEATING

UPONOR CONTROL SYSTEM WIRED

Uponor Control System, Wired

Installation Manual, UK, IRL

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In keeping with our policy of continuous improvement and development,
Uponor reserves the right to change specifications without prior notice.

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1. General recommendations

Safety measures

- Read and follow instructions.
- Installation must be performed by a qualified person according to local regulations.
- It is prohibited to make changes or modifications not specified in this manual.
- Power must be switched off when carrying out the wiring.
- We decline any responsibility concerning damages and breakdowns that may result from the non-observance of these instructions.

Symbols used in this manual

WARNING
Risk of bodily injuries or squeezing.
Non observance may harm health or cause damage to product components.

CAUTION
Important note on functionality. Non observance of this note may cause malfunctions.

Information
Important operating advice and information.

See another document.

See another page in the manual.

Heating/cooling.

Timer.

Power supply

WARNING

- The Uponor Control System uses a 230VAC 50Hz power supply.
- In case of emergency, immediately disconnect the plug from the 230V mains.
- Do not use water to clean the Uponor Control System.
- Do not expose the Uponor Control System to flammable vapors or gases.

Technical constraints

- Keep installation/data cables away from power cables > 50V to avoid interference.
- The electrical circuits of the boiler and the pump must be protected by a maximum 6A circuit-breaker.

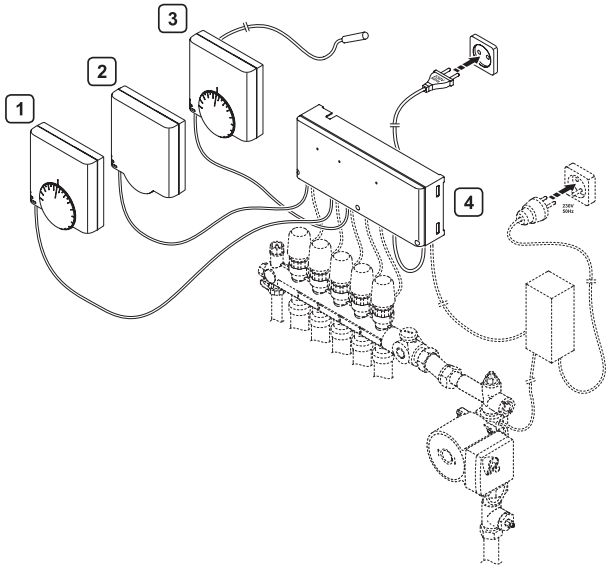
2. The Uponor Control System

The Uponor Control System is a complete management for underfloor heating systems. Comfort, user-friendliness and temperature control for each individual room of your home can be combined through the use of thermostats or floor temperature sensors.

For an optimal setting of the system see Operation Manual.

2.1 Example of a system

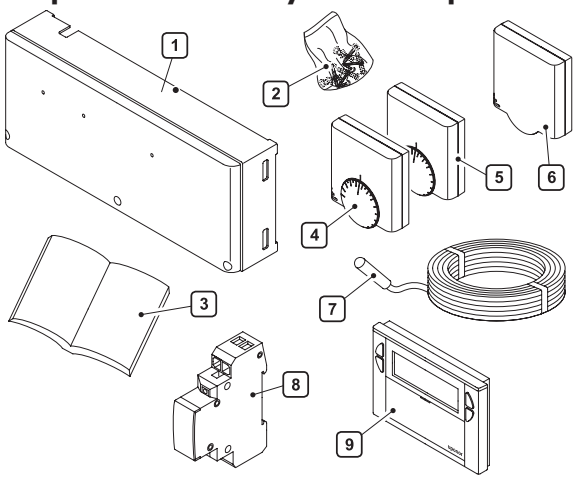
The Uponor Control System consists of thermostats, a controller and actuators. The controller manages the operation of the actuator when the thermostats detect a demand for heating or cooling. The Uponor Control System may be controlled with the help of three types of thermostats. Designed for maximum comfort, the thermostats communicate with the controller by non polarized two wired system. Don't "U-link" the outputs! It's automatic. One thermostat controls the following AC output if no thermostat is connected there, and so on. It's possible to use all kinds of Uponor Control System wired thermostats in the same system.



Mark	Description
1	Thermostat T-35
2	Thermostat Public T-33 (with the option of adding a floor sensor option)
3	Thermostat T-37 (with the option of adding a floor sensor option)
4	Controller, 6-channel (C-33) or 12-channel (C-35)

The floor sensor can be used for maximum or minimum limitation of the floor temperature, regardless of the room temperature. It can only be used with the Thermostat Public T-33 and Thermostat T-37.
For example, the maximum limitation can protect a sensitive floor covering from exposure to too high temperature when there is a high heat demand. The minimum limitation can keep a tiled floor warm even when there is a no general demand for heat supply to the room.

2.2 Uponor Control System components



Uponor designation	Item	Description
Uponor Controller	1	6 or 12-channel controller
	2	Fastening screws
	3	Installation and Operation Manual
Uponor Thermostat T-35	2	Fastening screws
	4	Thermostat
Uponor Thermostat T-37	2	Fastening screws
	5	Thermostat for floor sensor
Uponor Thermostat T-33	2	Fastening screws
	6	Thermostat Public
Uponor Floor sensor	7	Floor sensor for Thermostat Public T-33 and Thermostat T-37 (option)
Uponor Relay	8	Heating / cooling relay (option)
Uponor Timer	9	Timer (option)

3. Installation

Installation steps

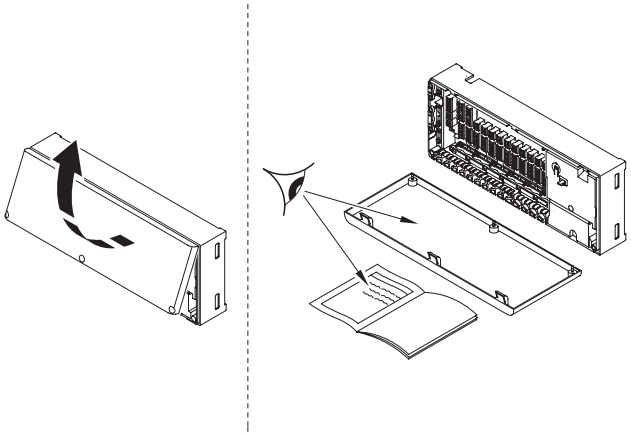
Uponor recommends that you follow the steps described below to guarantee the best possible installation:

	Description
3.1	Preparation before installation
3.2	Installation of the components (controller and thermostats)
3.3	Connections (thermostats and actuators to controller)
3.4	Room thermostats
3.5	Floor sensor thermostats
4	Finishing the installation

3.1 Preparation before installation

Before beginning the installation:

- Verify the contents of the package with the list shown in Section 2 to make sure you have all the necessary products;
- Check whether a floor sensor has been mounted;
- Study the wiring diagram in the fold-out or inside the controller cover.



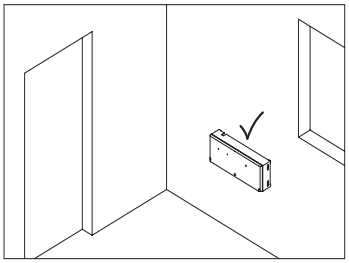
- A controller should be installed close to each manifold;
- A power outlet is required for the connection of the controller to the mains;
- The mounting locations for the Uponor Control System must be protected from running and dripping water;
- Put one thermostat for every room fitted with a heating floor (one thermostat can control several loops of the heating floor).

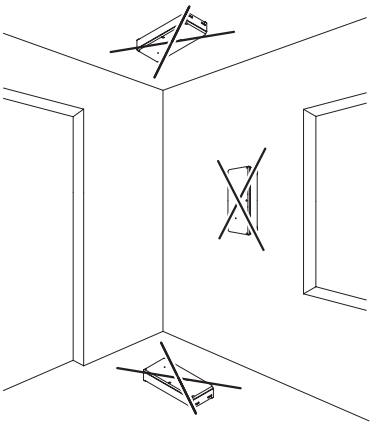
3.2 Installation of the components

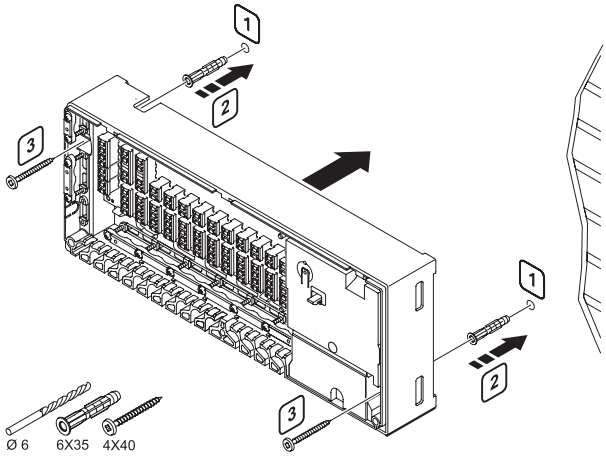
Mounting the controller (6 or 12-channel)

- Check that the cover of the controller can easily be removed.
- Check that the connectors and switches are easily accessible.

The controller has to be mounted horizontally. There is a risk for overheating if the controller is mounted vertically or on a horizontal surface.







1	Drill the wall (Ø6 mm)
2	Press the anchor into the hole (if concrete wall)
3	Attach the controller to the wall with screws

3.3 Connections

3.3.1 Controller description

See controller picture in fold-out.

6-channel controller

Mark	Description
1	Quick connector for 8 actuators
2	Power LED
3	230VAC 50Hz compartment
4	Quick connector for 6 thermostats

12-channel controller

Mark	Description
1	Quick connector for heating / cooling relay
2	Quick connector for timer
3	Quick connector for Condense sensor
4	Quick connector for 14 actuators
5	Bi-color power LED (red for Heating mode and green for Heating / Cooling mode)
6	Push-button for Heating or Heating / Cooling mode
7	230VAC 50Hz compartment
8	Quick connector for 12 thermostats

3.3.2 Connect the actuators to the controller

See wiring diagram in the fold-out.

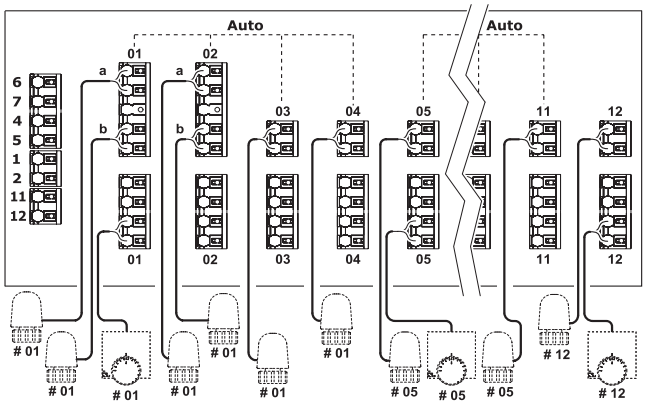
There are two non-polarized wires to connect the thermostat.

Example of an installation:

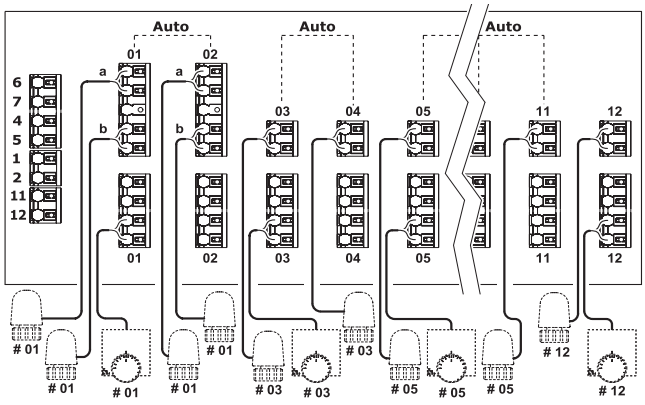
All actuators of a group are controlled by the thermostat connected to the first actuator.
Do not "U-Link" with wire. The linking is automatic. The first thermostat controls all following AC output (actuators) if no thermostat is added there. One thermostat can control the whole controller (14 outputs).

In this example, thermostat #01 controls the actuators on terminals 1 to 4.

Thermostat #05 controls the actuator on channel 05 and also controls channels 06 to 11 when no additional thermostat is linked to 06 to 11.



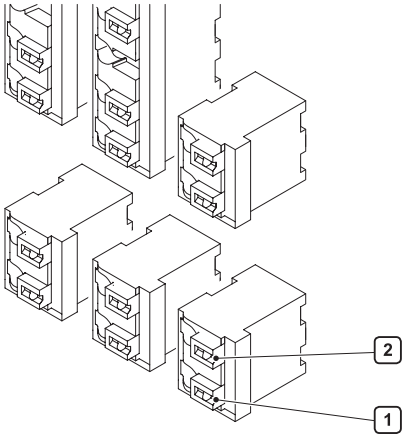
In the following example, thermostat #03 is added, it controls the actuator on channel 03 and also control channel 04.
Thermostat #01 controls actuators on channels 01a and 01b and channels 02a and 02b.



3.3.3 Controller wiring

One of the thermostat's two wires will always be connected to terminal 1 “Com” (non-polarized).

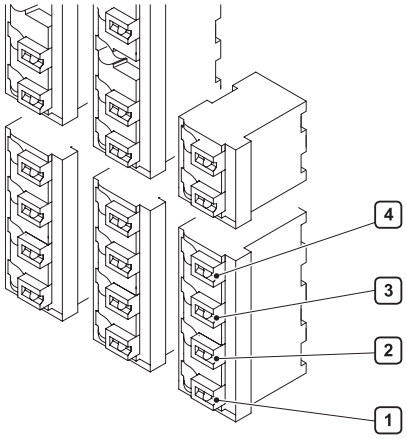
Thermostat quick connector on the 6-channel controller:



	Heating
1	Com
2	No timer control

Thermostat quick connector on the 12-channel controller:

Thermostat connection without timer:
Connect one wire of the thermostat to "com" and the other wire to 2.
If there is a timer:
Connect one wire of the thermostat to "com" and the other wire to 2 if the room requires no timer control. Or connect one wire to "Com" and the other wire to 3 (timer Zone 1) or 4 (timer Zone 2).
See explanation on next page.



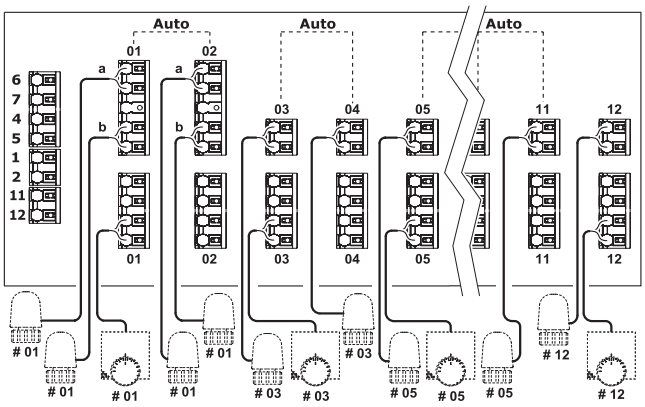
	Heating	Heating/cooling
1	Com	Com
2	No timer control	No timer control
3	Z1 Timer zone 1	Eco on: Timer control
4	Z2 Timer zone 2	Cool Off: No cooling for this room

3.3.3.1 Connection without Timer option

Connect thermostat and terminal:

"Com" and "No timer": The installation will work in a standard way with the thermostats regulating each room according to their set temperatures. Reduced mode is not available.

Example of an installation wired without Timer:



Thermostat #01 controls the actuator on channels 01a and 01b and channels 02a and 02b.
Thermostat #03 controls the actuator on channel 03 and controls channel 04.
Thermostat #05 controls the actuator on channel 05 to channel 11.
Thermostat #12 controls channel 12.

3.3.3.2 Connection with Timer option in Heating only mode (Only 12-channel controller)

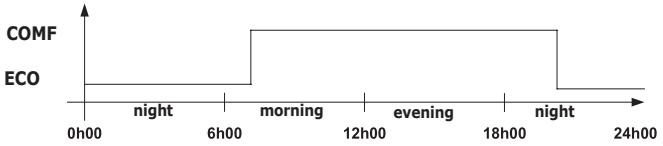
To connect the timer, see the wiring diagram in the fold-out.

One of the thermostat's two wires will always be connected to the "Com" quick connector and the second to one of the remaining three quick connectors, depending on the mode selected (non-polarized).

Connect thermostat and terminal:

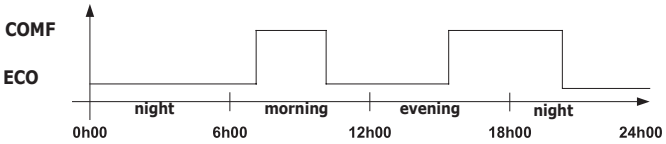
- "Com" and "No timer": The installation will work in a standard way with the thermostats regulating each room according to their set temperatures.
- "Com" and "Zone 1" (allocate the thermostat to Zone 1): The corresponding channel will run in Comfort mode according to the time slots in Zone 1 of the timer.

Example: Zone 1 (for settings see timer manual)



- "Com" and "Zone 2" (allocate the thermostat to Zone 2): The corresponding channel will run in Comfort mode according to the time slots in Zone 2 of the timer.

Example: Zone 2 (for settings see timer manual)

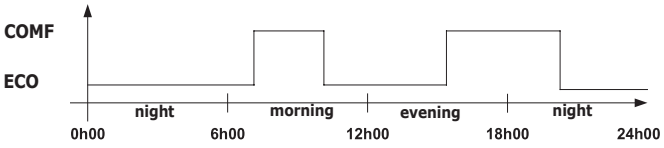


3.3.3.3 Connection with Timer option in Heating / Cooling mode

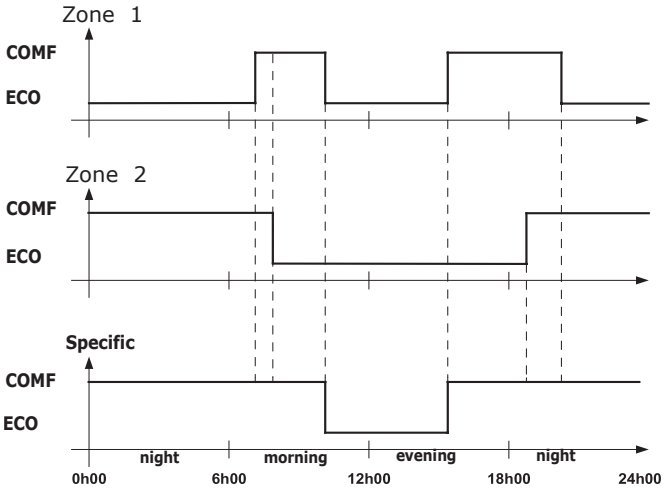
To connect the timer, see the wiring diagram in the fold-out.

Connect thermostat and terminal:

- "Com" and "No timer": When the system is running in Heating mode:
  The installation will work in a standard way with the thermostats regulating each room according to their set temperatures.
  When the system is running in Cooling mode:
  The installation will work in a standard way with the thermostats regulating each room according to their set temperatures.
- "Com" and Timer control: When the system is running in Heating mode:
  The corresponding channel will run in Comfort mode according to the time slots in Zone 1 of the timer.
  (for settings see timer manual)



When the system is running in Cooling mode:
In Cooling mode, Zone 1 and Zone 2 will be linked in a specific area: automatic overlap of Zone 1 and Zone 2 with specific period "ECO" and "Comfort". This process will take place automatically. The Zone 1 and 2 Comfort mode overrides the Eco mode. The corresponding channel will run in Comfort mode according to the time slots in the specific zone of the timer. This link also enables you to use your cooling unit during the night and to save energy when people are not at home.

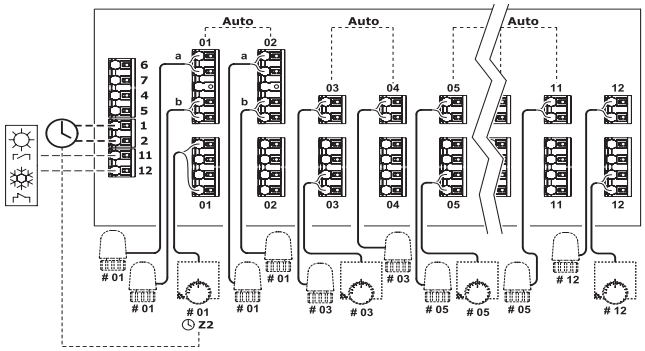


- "Com" and "Cool Off": When the system is running in Heating mode:
  The corresponding channel will run in Comfort mode according to the time slots in Zone 1 of the timer.
  When the system is running in Cooling mode:
  There will be no cooling in the room allocated to this thermostat.

Zone 2 is not used in Heating mode when heating / cooling is active.

One of the thermostat's two wires will always be connected to the "Com" quick connector and the second to one of the remaining three quick connectors, depending on the mode selected (non-polarized).

Example of an installation wired with a timer:



Thermostat #01 controls channels 01a, 01b, 02a and 02b in "Timer control" (Zone 1) if in Heating mode and "Cool Off" if in Cooling mode.

The following thermostats controls its channels in "No timer" mode.

For more information about Comfort/Eco features, see the timer Manual.

For the 6-channel controller, the thermostat is directly connected to the terminals (non-polarized). Comfort/Eco features are not available.

3.3.4 Installation of the options

Different options can be added to the Uponor control system to enhance its features, optimize your comfort and save energy.

WARNING
Mains supply 230VAC 50Hz
Disconnect the 230V mains before installing or changing the device wiring.

3.3.4.1 Timer

The Uponor control system can be equipped with a timer to add energy-saving features and define independent zones. The timer has two programming zones. Each offers four programming options, including one that can be personalized, thus enabling different programmes to be created for each day of the week.

See "3.3.3.2 Connection with Timer option in Heating only mode" or "3.3.3.3 Connection with Timer option in Heating / Cooling mode", page 9, 10 for more information on wiring.

See wiring diagram in the fold-out.

See the timer Manual for more information.

The timer is not available for the 6-channel controller.

3.3.4.2 Floor sensor

The floor sensor can be used for maximum or minimum limitation of the floor temperature, regardless of the room temperature. It can only be used with the Thermostat Public T-33 and Thermostat T-37. For example, the maximum limitation can protect a sensitive floor covering from exposure to too high temperature when there is a high heat demand. The minimum limitation can keep a tiled floor warm even when there is a no general demand for heat supply to the room. The minimum limitation should not be set to a value higher than the required room temperature.

See "3.5 Thermostat option", page 14 for more information on wiring and setting.

See the floor sensor Manual for more information.

3.3.4.3 Controller heating / cooling input

If your installation is equipped with a cooling unit, the Uponor control system can be run through a heating / cooling relay.

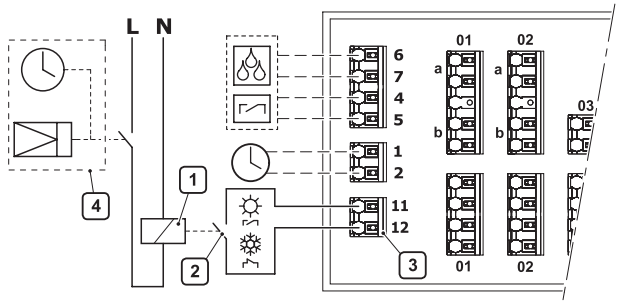
The controller heating / cooling input operates with the connection of a dry contact.

The contact's control can be either an additional regulation system or a two-position switch.

Do not apply voltage to the heating / cooling contact. Damage to the Uponor Control System will occur.

Connect the heating / cooling relay between terminals 11 and 12 of the controller (symbol ☼/❄).

Example of wiring:



1	Heating / cooling relay
2	Heating / cooling contact
3	Controller heating / cooling input
4	Example of a different type of heating / cooling relay command

To configure the controller in Heating / Cooling mode, press the push-button on the controller to switch between modes:

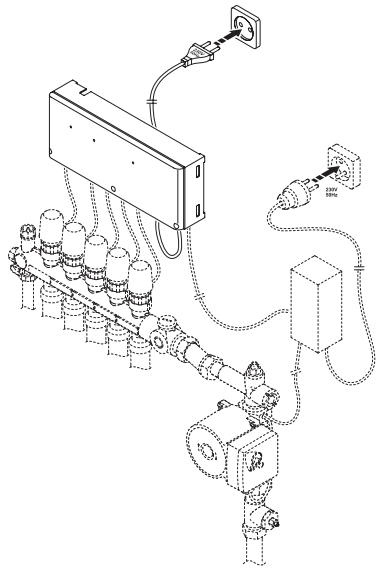
- The LED is red for Heating mode.
- The LED is green for Heating / Cooling mode.

Heating / Cooling mode is not available for the 6-channel controller.

3.3.4.4 Circulation pump relay

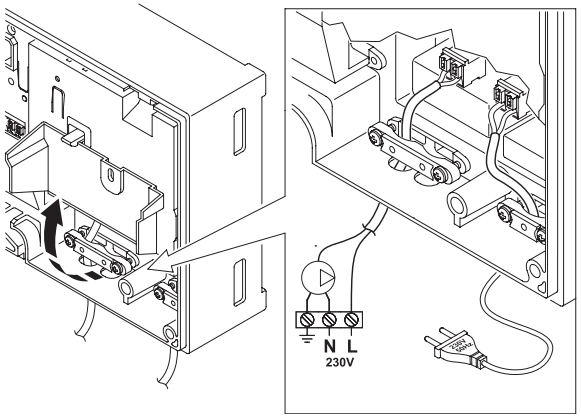
The Uponor Control System can operate a circulation pump on heating/cooling demand. The pump will stop when there is no heat or cooling demand.

Example of an installation:



WARNING
See the circulation pump supplier documentation before performing the connection.

The controller controls the circulation pump via connection on terminal block (dry contact). There is no power for the pump in the box, just the dry contact.

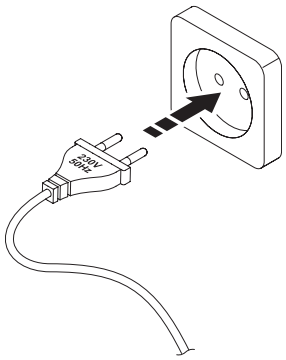


The electrical circuits of the pump must be protected by a maximum 6A circuit-breaker.

1	Ensure the power is disconnected
2	Open 230V compartment and fix cover to hanger
3	Connect "L" wire from/to pump via relay
4	Close 230V compartment

The pump runs when at least one actuator is active. During actuator exercise, the pump continues to work normally.

3.3.5 Connecting the controller to the mains



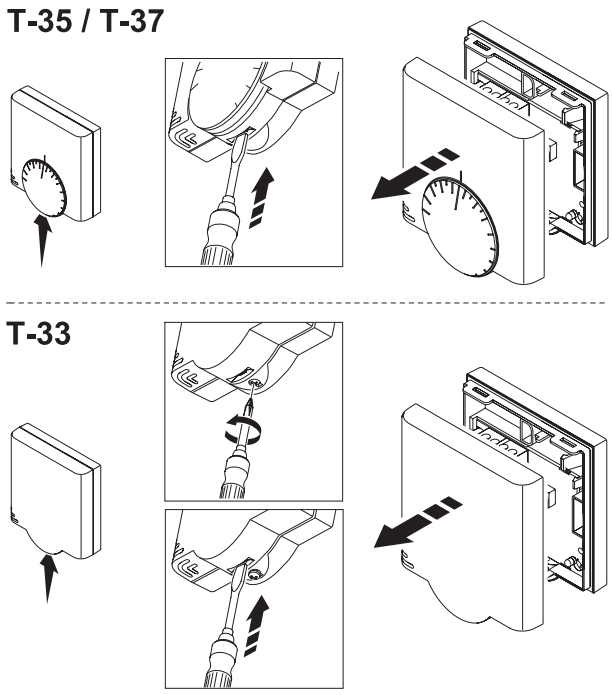
1	Check that the wiring is complete (actuators, thermostats, pump, timer)
2	Check that the 230V compartment is closed
3	Connect the plug to the mains

3.4 Thermostats

The Uponor Control System may be controlled with three types of thermostats.

- Thermostat T-35 wired:
  Adjust the temperature with the dial. The dial must be removed to set min/max on the thermostat.
- Thermostat Public T-33 wired:
  The thermostat is designed for public location.
  The potentiometers used for the settings are protected with a cover. This thermostat also can be used to connect a floor sensor option.
- Thermostat T-37 wired for floor sensor:
  Adjust the temperature with the dial. The potentiometers used for the settings are protected with a cover. The dial and the cover must be removed to set up min/max on the thermostat. This thermostat also can be used to connect a floor sensor option.

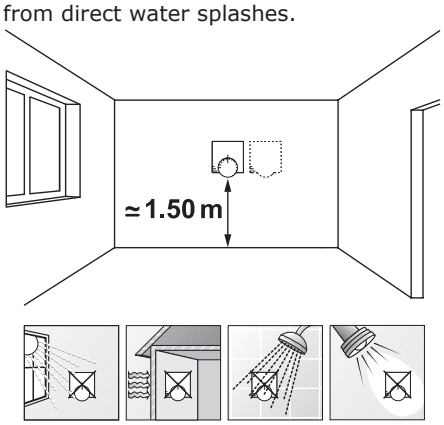
3.4.1 Opening the thermostats



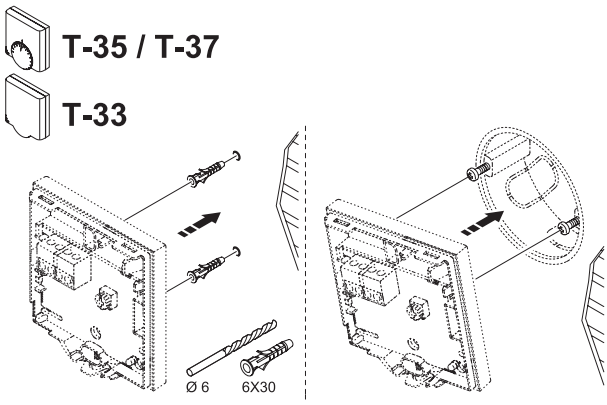
3.4.2 Mounting and wiring the thermostats

3.4.2.1 Location of a thermostat
(For all thermostats)

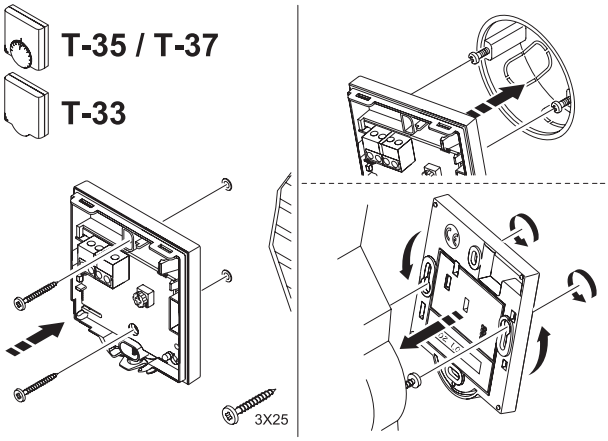
- On an indoor wall.
- 1.5 m to 1.8 m from the floor.
- Away from any source of humidity. (IP20)
- Away from any source of heat (television, electronic equipment, fireplace...).
- Away from direct solar radiation.
- Away from direct water splashes.



3.4.2.2 Thermostat fixation
Fixing on the wall:
Drill the wall (Ø6 mm). Fix anchors in the wall.
Let the screw protrude from the box (3 mm).

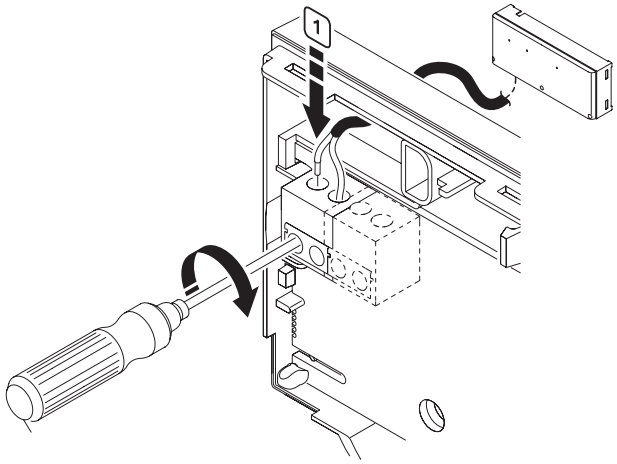


Screw the thermostats on the wall or/and on the box.



3.4.2.3 Thermostat wiring

Connect the cable from the controller (non-polarized)



See: "3.3.3 Controller wiring", page: 8

3.4.3 Thermostat setup

See Operation Manual for thermostat min/max and room temperature settings.

For more information on external sensor settings: See "3.5 Thermostat option".

3.5 Thermostat option

Open the thermostat cover: see "3.4 Thermostats", page: 13.

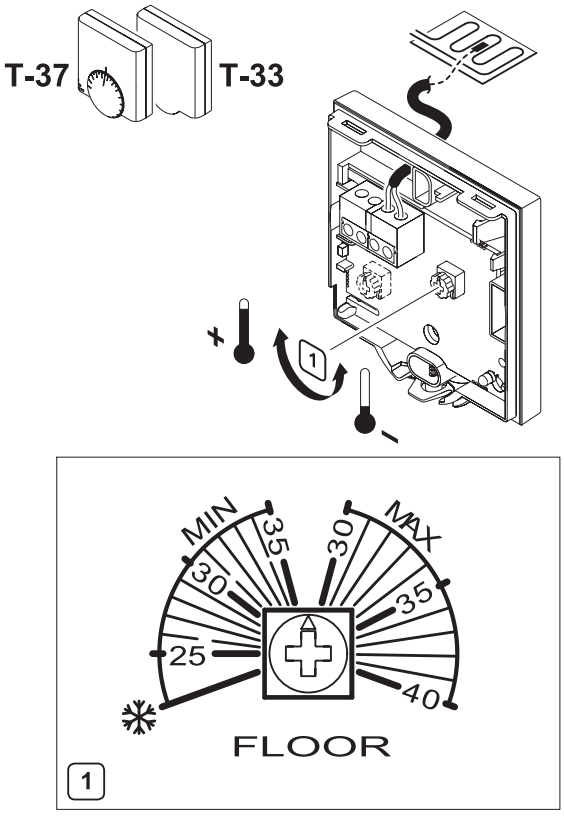
3.5.1 Introduction

Thermostat Public T-33 and Thermostat T-37 allow a floor sensor to be fitted to the system. The temperatures thus measured ensure a more efficient management of the system.

3.5.2 Wiring and setting the floor sensor potentiometer

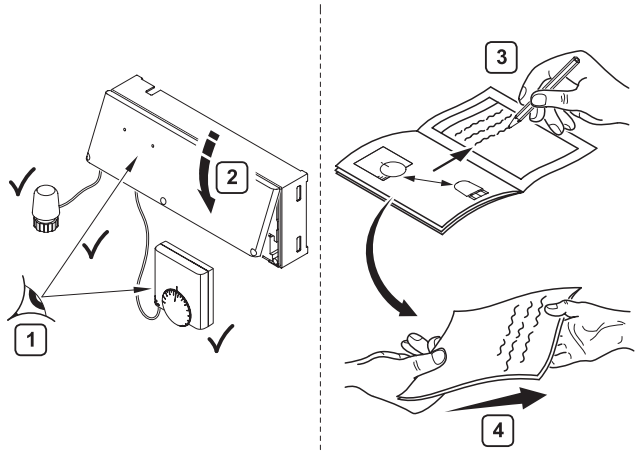
When a floor sensor is connected to the thermostat to control the temperature of the floor, the limitation of the floor temperature can be adjusted with a potentiometer.
The floor sensor settings override the thermostat.
Settings:

- Minimum range: 5°C to 35°C.
- Maximum range: 30°C to 40°C



1 Select the required temperature using the potentiometer

4. Finishing the installation



Make a complete check up of the installation:

1	• Verify that the thermostat covers are in place • Check that the thermostats are working correctly (turn thermostat dial to obtain a heating demand and make sure that the actuators are running)
2	Close the cover of the controller Close the thermostat covers where necessary
3	**Fill in the "Installation report" on the centre pages of booklet**
4	Give the manual and all information about the system to the users

5. System maintenance

5.1 Controller current limitation

To avoid risk of current overload, the controller uses a protection system:

At start-up, 14 actuators cannot be open at the same time. During application, 14 actuators can work at the same time. The controller opens the maximum actuators according to the current limitation.

5.2 Actuator's behavior

The normal position of an actuator is closed. The controller commands only the opening of an actuator.

5.3 Fallback mode

If a thermostat is short-circuited or not detected, the controller executes the Fallback mode: 7 min open, 14 min closed to maintain the temperature in the room (heating or cooling) until the problem is resolved.
If the wire is broken, precedent thermostat will take the command or else Fallback mode is active.

5.4 Automatic exercise function

The actuators and the pump are designed to avoid seizing, thereby increasing the reliability of the equipment.

This exercise is done every 6 days +/- 0-24 hours at random: Exercise pump and actuators.

The pump exercise operates only if the pump has not been activated since the last exercise. The pump is activated 3 minutes during the exercise.

The actuators exercise operates only if the actuators have not been activated since the last exercise. The exercise consists of opening and completely closing the actuator.

- 5 minutes to open an actuator.
- 9 minutes to close an actuator.

5.5 Resetting Installation

To reset the Installation, disconnect and reconnect the controller to the mains.

6. Troubleshooting

Normal system operating conditions:

The Power LED of the controller is lit up. The actuators are activated if there is demand for heating or cooling.

Failure	Causes	Indication	Solutions	Note
room too cold (or too warm in Cooling mode) *	thermostat is connected on a bad channel	■ see Installation report and check the wiring ■ the LED of the thermostat does not switch on or off with heating or cooling demand		
	actuator does not open	the white indication can not be seen in the indicator window	■ replace the actuator ■ measure the outputs if 24V when heat demand	
	the thermostat is out of order		replace the thermostat	
room too warm (or too cold in Heating mode) *	thermostat is connected on a bad channel	■ see Installation report and check the wiring ■ the LED of the thermostat does not switch on or off with heating or cooling demand		
	actuator does not close	the corresponding loop is warm even after a long period without heat call	■ check that the actuator is correctly mounted ■ replace the actuator	
	the thermostat is out of order		replace the thermostat	
the floor is cold	■ no heat demand (from underfloor heating system) ■ the room is heated by another heat source ■ The supply water is too hot. This causes a hot floor for a short while, followed by a cold, uncomfortable floor	room temperature OK, but the floor is cold		
the system does not start	no voltage	power LED off in controller	■ check that the controller is connected to the mains and that the wiring in the 230V compartment is OK ■ check the circuit-breaker in the principal electrical board	
	cable breakdown	230V in socket but not in 230V compartment	replace cable and plug	
the thermostat is not supplied	problem with a terminal block	the LED of the thermostat does not switch on or off with heating or cooling demand	check the terminal	
	cable breakdown	the LED of the thermostat does not switch on or off with heating or cooling demand	replace cable	
	the thermostat is out of order		replace the thermostat	

*: To find out if a problem is caused by the supply system or the control system. Check the temperatures of the flow and return pipes for the loop(s) corresponding to the room. Loosen the corresponding actuator(s) from the manifold. If the loop temperature starts to rise after a short while (a few minutes for the flow and longer for the return pipe, depending on the floor type), the problem is most likely caused by the room control system. If the temperature remains the same, the problem is in the system (hydraulic).